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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,032	03/30/2004	Hirotaka Sato	900-494	1422

23117 7590 06/29/2007

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EXAMINER	
TRINH, THANH TRUC	
ART UNIT	**PAPER NUMBER**
1753	

MAIL DATE	DELIVERY MODE
06/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/812,032	SATO ET AL.	
	Examiner	Art Unit	
	Thanh-Truc Trinh	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/30/2004, 7/24/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-5 and 7 and 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Tourneux (US Patent 4336413).

Regarding claim 1, as seen in Figures 5, Tourneux discloses a solar cell unit comprising a solar cell module; a module frame (21, 22, 23, 24) provided around the solar cell module as supporting the solar cell module for mounting the solar cell unit on an oblique roof; and a drain channel (30, 31) provided along an edge of the module frame outside the module frame.

Regarding claim 2, as seen in Figure 1, Tourneux discloses the solar cell module having a rectangular shape; wherein the module frame includes two horizontal frame portions (24, 23) provided parallel to each other to be disposed on a roof ridge side and on an eave side, respectively, when the solar cell unit is mounted on the oblique roof, and a first side frame portion (22) and a second side frame portion (21) respectively extending from opposite ends of one of the horizontal frame portions to opposite ends of the other horizontal frame portion; and the drain channel is provided along an outer side of the first side frame portion. (See Figures 2 and 4)

Regarding claim 3, as seen in Figure 2, Tourneux describes the drain channel has a rib (28) projecting upward from a bottom of the drain channel and extending longitudinally of the drain channel.

Regarding claim 4, as seen in Figure 1, Tourneux describes the drain channel having a partial division 13 that permit the flow of water from groove of frame portion 24. (See col. 4 lines 40-43). It is the Examiner's position that the partial division 13 is a barrier plate which closes one end of the drain channel located on the roof ridge side.

Regarding claim 5, as seen in Figure 2, Tourneux describes the drain channel includes a channel bottom (back portion 27) and opposite side walls; the second side frame portion (21) has a planar projection (back portion of frame portion 21) projecting horizontally outward from an entire upper edge of the second side frame portion; and the projection is located at a higher level than the side walls of the drain channel.

Regarding claim 7, Tourneux describes the projection has a rib projecting downward from a rear surface of the projection and extending along the second side frame portion (21). (See Figure 2). Tourneux teaches all the structural limitations of the instant claim, therefore the reference is deemed to be anticipatory.

Regarding claim 10, Tourneux describes a method for mounting a plurality of solar cell units on an oblique roof (Figure 4), the solar cell units each comprising a rectangular solar cell module (Figure 1); a module frame (21, 22, 23, 24) provided around the solar cell module as supporting the solar cell module for mounting the solar cell unit on an oblique roof, the module frame including two horizontal frame portions provided parallel to each other to be disposed on a roof ridge side and on an eave side

respectively (24 and 23 in Figure 1), when the solar cell unit is mounted on the oblique roof, and a first side frame portion and a second side frame portion respectively extending from opposite ends of one of the horizontal frame portions to opposite ends of the other horizontal frame portion (See Figures 2-4); and a drain channel (47) provided along an outer side of the first side frame portion (See Figure 4). Figure 1 shows the water flowing in the direction of arrow 15. Figures 3, 4, 5B, 6B, 7 and 8 show the solar cell modules are mounted on an oblique roof, and on an eave side first. As seen in Figures 2 and 4, Tourneux shows that the first side frame portion of one of two adjacent solar cell units and the second frame portion of the other solar cell unit are opposed to each other with a gap being defined therebetween and a drain channel, such as groove 47 in Figure 4, provided along the first side frame portion of the one unit is located below the gap (See Figure 4).

Regarding claim 11, Tourneux disclose a method for mounting a solar cell unit on a partly-tile covered oblique roof (See Figures 3, 5B, 6B, 7-8). The solar cell unit comprises a rectangular solar cell module (See Figure 1); a module frame (comprising pieces 21, 22, 23, 24) provided around the solar cell module as supporting the solar cell module for mounting the solar cell unit on an oblique roof (See Figure 1-4); the module frame including two horizontal frame portions provided parallel to each other to be disposed on a roof ridge side and on an eave side, (24 and 23), when the solar cell unit is mounted on the oblique roof, and a first side frame portion (22) and a second side frame portion (21) respectively extending from opposite ends of one of the horizontal frame portions to opposite ends of the other horizontal frame portions; and a drain

channel provided along an outer side of the first side frame portion (See Figures 2 and 4). The method comprises the steps of providing a rectangular installation region on the oblique roof. It is the Examiner's position that the roof frame surrounded by solar cell units is the installation region, wherein the installation region has two horizontal edges parallel to a roof ridge or an eave and two side edges respectively extending from opposite ends of one of the horizontal edges to opposite ends of the other horizontal edge. Mounting the next unit onto the installation region inherently is the step of opposing the first side frame portion of the unit to one of the side edges of the installation region to provide a gap between the first side frame portion and the one side edge, and also a drain channel provided along the first side frame portion is located below the gap. It is also the Examiner's position that a solar cell unit of Tourneux is a roof tile, because it is mounted directly to a rafter 43 as shown in Figure 4 or a batten 43 as shown in Figures 7-8. Thus, the gap providing step inherently comprises the step of providing the gap between the first side frame portion and the side edge of the roof tile, or the second side frame portion of the other unit.

Regarding claim 12, Tourneux disclose a method for mounting a solar cell unit on a partly-tile covered oblique roof (See Figures 3, 5B, 6B, 7-8). The solar cell unit comprises a rectangular solar cell module (See Figure 1); a module frame (comprising pieces 21, 22, 23, 24) provided around the solar cell module as supporting the solar cell module for mounting the solar cell unit on an oblique roof (See Figure 1-4); the module frame including two horizontal frame portions provided parallel to each other to be disposed on a roof ridge side and on an eave side, (24 and 23), when the solar cell unit

is mounted on the oblique roof, and a first side frame portion (22) and a second side frame portion (21) respectively extending from opposite ends of one of the horizontal frame portions to opposite ends of the other horizontal frame portions; and a drain channel provided along an outer side of the first side frame portion (See Figures 2 and 4). The method comprises the steps of providing a rectangular installation region on the oblique roof. It is the Examiner's position that the roof frame surrounded by solar cell units is the installation region, wherein the installation region is inherently in rectangular shape since the solar cell units have rectangular shape. The installation region also inherently has two horizontal edges parallel to a roof ridge or an eave and two side edges respectively extending from opposite ends of one of the horizontal edges to opposite ends of the other horizontal edge. Mounting the next unit onto the installation region inherently is the step of opposing the first side frame portion of the unit to one of the side edges of the installation region to provide a gap between the first side frame portion and the one side edge. It is also the Examiner's position that a solar cell unit of Tourneux is a roof tile, because it is mounted directly to a rafter 43 as shown in Figure 4 or a batten 43 as shown in Figures 7-8. Therefore, the one side edge of the installation region is defined by a side edge of a roof tile (or a solar cell unit). The side edge (22) of the roof tile opposed to the second side frame portion (21) has an underlap portion (back side 27) projecting horizontally outward from a lower portion of the side edge, and the gap providing step comprises the step of providing the gap between the second side frame portion (21) and the side edge (22) of the roof tile (or solar cell unit) is located below the gap.

2. Claims 1-3 and 5-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Tanaka (PGPub 20040154655).

See Figures 1, 4, 7 and 8.

Regarding claim 1, Tanaka discloses a solar cell unit (U) comprising a solar cell module (M); a module frame (10) provided around the solar cell module as supporting the solar cell module for mounting the solar cell unit on an oblique roof; and a drain channel (13c) provided along an edge of the module frame outside the module frame. (See Figure 4 and paragraphs [0079]-[0080])

Regarding claim 2, as seen in Figure 1, Tanaka discloses the solar cell module having a rectangular shape (See paragraph [0057]); wherein the module frame includes two horizontal frame portions (front side – rear side) provided parallel to each other to be disposed on a roof ridge side and on an eave side, respectively, when the solar cell unit is mounted on the oblique roof, and a first side frame portion (left side) and a second side frame portion (right side) respectively extending from opposite ends of one of the horizontal frame portions to opposite ends of the other horizontal frame portion; and the drain channel (13c) is provided along an outer side of the first side frame portion. (See Figure 4 and 7 and paragraphs [0035]-0037], [0079])

Regarding claim 3, as seen in Figures 4 and 7, Tanaka describes the drain channel 13c has a rib (13d) projecting upward from a bottom of the drain channel and extending longitudinally of the drain channel.

Regarding claim 5, as seen in Figures 4 and 7-8, Tanaka describes the drain channel includes a channel bottom (13c) and opposite side walls; the second side frame

portion (14) has a planar projection (14b) projecting horizontally outward from an entire upper edge of the second side frame portion; and the projection is located at a higher level than the side walls of the drain channel. (See Figure 4)

Regarding claim 7, as seen in Figure 4 and 8, Tanaka describes the projection has a rib (14c) projecting downward from a rear surface of the projection and extending along the second side frame portion for dripping rainwater flowing along the rear surface of the projection. (See paragraph [0080])

Regarding claim 8, as seen in Figures 4 and 7, Tanaka describes the side frame portion further has an auxiliary drain channel (13b) projecting under the module and extending along an inner side of the first side frame portion.

Regarding claim 9, as seen in Figures 4 and 7, Tanaka describes the first side frame portion further has a planar auxiliary projection (a small extension of 13a) projecting horizontally outward from an entire upper edge of the first side frame portion.

Regarding claim 10, as seen in Figures 1, 4, 7 and 8, Tanaka describes a method for mounting a plurality of solar cell units (U) on an oblique roof (or slanted roof - See Abstract). The solar cell units (U) each comprising a rectangular solar cell module M (See paragraph [0057]); a module frame (10) provided around the solar cell module as supporting the solar cell module for mounting the solar cell unit on an oblique roof, the module frame including two horizontal frame portions provided parallel to each other to be disposed on a roof ridge side and on an eave side respectively (front side – rear side), when the solar cell unit is mounted on the oblique roof, and a first side frame portion and a second side frame portion (left side 13 and right side 14) respectively

extending from opposite ends of one of the horizontal frame portions to opposite ends of the other horizontal frame portion (See Figures 4 and 7-8); and a drain channel (13c) provided along an outer side of the first side frame portion (See Figures 4 and 7). As seen in Figure 4, Tanaka shows that the solar cell units are mounted parallel to a roof ridge or an eave on the oblique roof so that the first side frame portion (13) of one of two adjacent solar cell units and the second frame portion (14) of the other solar cell unit are opposed to each other with a gap being defined therebetween and the drain channel (13c) provided along the first side frame portion of the one unit is located below the gap.

Regarding claim 11, as seen in Figures 1, 4, 7 and 8, Tanaka describes a method for mounting a plurality of solar cell units (U) on an oblique roof (or slanted roof - See Abstract). The solar cell units (U) each comprising a rectangular solar cell module M (See paragraph [0057]); a module frame (10) provided around the solar cell module as supporting the solar cell module for mounting the solar cell unit on an oblique roof, the module frame including two horizontal frame portions provided parallel to each other to be disposed on a roof ridge side and on an eave side respectively (front side – rear side), when the solar cell unit is mounted on the oblique roof, and a first side frame portion and a second side frame portion (left side 13 and right side 14) respectively extending from opposite ends of one of the horizontal frame portions to opposite ends of the other horizontal frame portion (See Figures 4 and 7-8); and a drain channel (13c) provided along an outer side of the first side frame portion. The method comprises the steps of providing a rectangular installation region (the space between roofing tiles in

Figure 4) on the oblique roof. The rectangular installation region having two horizontal edges parallel to a roof ridge or an eave and two side edges respectively extending from opposite ends of one of the horizontal edges to opposite ends of the other horizontal edge (See paragraphs [0036-0046] and [0089-0093]; and mounting the unit on the installation region so that the first side frame portion (13) of the unit is opposed to one of the side edges (1a) of the installation region to provide a gap between the first side frame portion and the one side edge and the drain channel provided along the first side frame portion is located below the gap (See Figure 4). The side edges of the installation region are each defined by a side edge of a roof tile. The gap providing step comprises the step of providing the gap between the first side frame portion and the side edge of the roof tile. (See Figure 4 and paragraphs [0089-0093])

Regarding claim 12, as seen in Figures 1, 4, 7 and 8, Tanaka describes a method for mounting a plurality of solar cell units (U) on an oblique roof (or slanted roof - See Abstract). The solar cell units (U) each comprising a rectangular solar cell module M (See paragraph [0057]); a module frame (10) provided around the solar cell module as supporting the solar cell module for mounting the solar cell unit on an oblique roof, the module frame including two horizontal frame portions provided parallel to each other to be disposed on a roof ridge side and on an eave side respectively (front side – rear side), when the solar cell unit is mounted on the oblique roof, and a first side frame portion and a second side frame portion (left side 13 and right side 14) respectively extending from opposite ends of one of the horizontal frame portions to opposite ends of

the other horizontal frame portion (See Figures 4 and 7-8); and a drain channel (13c) provided along an outer side of the first side frame portion. The method comprises the steps of providing a rectangular installation region (the space between roofing tiles in Figure 4) on the oblique roof. The rectangular installation region having two horizontal edges parallel to a roof ridge or an eave and two side edges respectively extending from opposite ends of one of the horizontal edges to opposite ends of the other horizontal edge. (See paragraphs [0036-0046] and [0089-0093] and Figure 4); and mounting the unit on the installation region so that the second side frame portion (14) of the unit is opposed to one of the side edges of the installation region to provide a gap between the second side frame portion and the one side edge, wherein the one side edge of the installation region is defined by a side edge of a roof tile (1). The side edge of the roof tile opposed to the second side frame portion (14) has an underlap portion (1b) projecting horizontally outward from a lower portion of the side edge, and the gap between the second side frame portion and the side edge of the roof tile so that the underlap portion of the roof tile is located below the gap. (See Figure 4)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tourneux (US Patent 4336413) in view of Tanaka (PGPub 20040154655).

As seen in Figure 2, Tourneux describes the drain channel (30 and 31) and the projection (back side of frame portion 21) each have a predetermined width.

Tourneux does not teach the width of the drain channel is greater than the width of the projection. Nor does he teach an auxiliary drain channel projecting under the module and extending along an inner side of the first side frame portion, and a planar auxiliary projection projecting horizontally outward from an entire upper edge of the module.

As relevant to claim 6, Tanaka teaches the width of drain channel (13c) is greater than the width of the projection planar projection (14b). (See Figure 4).

As relevant to claim 8, Tanaka teaches an auxiliary channel (at portion 13b) projecting under the module and extending along an inner side of the first side frame portion. (See Figures 4 and 7).

As relevant to claim 9, Tanaka teaches a planar auxiliary projection (a small extension of 13a) projecting horizontally outward from an entire upper edge of the first side portion (13). (See Figures 4 and 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the solar cell unit of Tourneux by having a greater width for the drain channel and providing an auxiliary channel and a planar auxiliary projection as taught by Tanaka, because it would prevent rain water leakage. (See paragraph [0015])

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka (PGPub 20040154655) in view of Bonn (DE 19521098).

Regarding claim 4, Tanaka discloses a solar cell unit as described in claim 1.

Tanaka does not teach a barrier plate which closes one end of the drain channel located on the roof ridge side.

Bonn teaches a barrier plate (or stop edge 5) which closes one end of the drain channel located on the roof ridge side. (See Abstract and the Figure on the front page)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the unit of Tanaka by providing a barrier plate as taught by Bonn, because it would block off or stop water running backward. (See Abstract)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh-Truc Trinh whose telephone number is 571-272-6594. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TT
6/22/2007

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